ETHANE EXTRACTION PROCESS FOR A HYDROCARBON GAS STREAM

ABSTRACT:

A process for ethane extraction from a gas stream based on turboexpansion and fractionation with no mechanical refrigeration is provided. The feed gas is sweetened and dehydrated by a conventional amine process and by a molecular sieve unit, to remove carbon dioxide and water. After this pretreatment, the feed gas undergoes to a series of cooling steps through a cryogenic brazed aluminum heat exchanger and fed to a demethanizer column. A stream rich in methane is recovered from the top of this column and fed to a centrifugal compressor and subsequently routed to a booster/turboexpander. The temperature of the methane gas is greatly reduced by the expansion allowing the cooled methane stream to be a cooling source for cryogenic heat exchanger. Feed for a de-ethanizer column comes from the bottom liquids of the de-methanizer column. Ethane is recovered overhead at the de-ethanizer column.